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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/525,234

02/22/2005

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EXAMINER

KALAFUT, STEPHEN J

ART UNIT

PAPER NUMBER

1795

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/525,234	<b>Applicant(s)</b> TAKAGI ET AL.	
	<b>Examiner</b> Stephen J. Kalafut	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 09 May 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-5, 12-17, 22, 23, 27, 28, 30-34, 36, 38 and 39 is/are pending in the application.
- 4a) Of the above claim(s) 12-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 22, 23, 27, 28, 30-34, 36 and 38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 February 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>22 Feb 2005</u> .   | 6) <input type="checkbox"/> Other: _____                          |

Applicant's election without traverse of Group I, a separator for a fuel cell in the reply filed on 09 May 2008 is acknowledged. Claims 12-17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Claims 1-3 and 38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1, the term "stretched" is unclear, because it implies that some type of elastic deformation has taken place, which does not appear to be present in the disclosed metal component. The claim is also ambiguous as to whether the metal base or the Au film includes the "cutting plane". In claim 2, the term "reflecting a contour of said component" is unclear, because the term "reflecting", while implying a relationship between the shape of the component and that of the cutting line, does not specify what this relationship is. Claims 3 and 38 depend from either of claims 1 and 2, and would thus also be indefinite.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 2 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishida *et al.* (JP 2000-21418), cited by applicants.

Nishida *et al.* disclose a metallic separator plate to be used with a polymer electrolyte fuel cell (section 0010), which plate is made of the stainless steel SUS316 (section 0024) coated with a layer of Au or Ag (section 0011). The steel would mainly comprise Fe, a metal less noble than Au. Thus, the steel plate would have a film of Au or Ag formed on its main surface. After the Au or Ag is plated onto a 0.3 mm thick plate of steel, manifold holes are formed (section 0024). These holes and the straight edges of the plate (figures 2 and 4) would give the plate cutting lines that reflect the contour of the coated plate, to the extent that the term “reflect” is understood. The plate also includes gas distribution grooves (9, 10) on either side, which would form the “regular roughs” on the two surfaces, these “roughs” contacting the adjacent fuel components. The plating layer is 0.5 microns thick (section 0024), which would be 500 nm.

Claims 2 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Fujii *et al.* (JP 2001-297,777), cited by applicants.

Fujii *et al.* disclose a metallic separator plate to be used with a polymer electrolyte fuel cell (section 0009), which comprises a plate made of stainless steel, aluminum or titanium (section 0014), all less noble than Au, coated by Au, Ru, Rh, Pd, Os, Ir or Pt (section 0009). The metal coating has a thickness of 30 to 500 Å (section 0011), which would be 3 to 50 nm. The straight edges of the plates (figures 2, 3 and 4) would constitute cutting lines that reflect the contour of the coated plate, to the extent that the term “reflect” is understood. The plate also includes ribs (23, 33) on each side, which would form the “regular roughs” on the two surfaces, these “roughs” contacting the adjacent fuel components.

Claims 2, 4 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Kito *et al.* (JP 2001-345,109), cited by applicants.

Kito *et al.* disclose a metallic separator plate to be used with a polymer electrolyte fuel cell (section 0002), which comprises a plate made of stainless steel, aluminum, nickel-iron alloy or titanium (section 0013), all less noble than Au, coated by a layer Au having a thickness of 0.01 to 0.06 microns (section 0016), which would be 10 to 60 nm. The straight edges of the plates (figure 1) would constitute cutting lines that reflect the contour of the coated plate, to the extent that the term “reflect” is understood. The plate also includes ribs (figure 2) on each side, which would form the “regular roughs” on the two surfaces, these “roughs” contacting the adjacent fuel components. Each rib comprises a portion (2) of the Au coating layer. Thus, the Au film would not cover the entire plate, but have exposed regions of the base therein.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 22, 23, 27, 28 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Nishida *et al.*, Fujii *et al.* or Kito *et al.*, each in view of Saito *et al.* (US 6,348,279).

Saito *et al.* is the equivalent of EP 949,704, cited by applicants. These claims differ from Nishida *et al.*, Fujii *et al.* and Kito *et al.* by reciting a surface roughness of 1.5  $\mu\text{m}$  or less. Saito *et al.* disclose a separator for a fuel cell that has a surface roughness of 0.1 to 10 1.5  $\mu\text{m}$  (column

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2, lines 1-9), where the separator may be made of materials such as metal (column 2, lines 21-33), including metal coated on metal, where the metals include titanium, steel, aluminum, gold and silver (column 3, lines 19-27). Saito *et al.* also teach guidelines for determining an optimal degree of roughness (column 3, lines 34-40). Because these metals are the same as those disclosed by Nishida *et al.*, Fujii *et al.* or Kito *et al.*, and because of the low interfacial contact resistance provided by the roughness (column 1, lines 53-58), it would be obvious to use a roughened surface as taught by Saito *et al.* on the separators of any of Nishida *et al.*, Fujii *et al.* or Kito *et al.* Because the metals disclosed by all these references are the same as those presently claimed, they would have the same results in a metal ion test.

Claims 30-34, 36 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kito *et al.* in view of Yamauchi *et al.* (JP 2002-75,399), cited by applicants.

These claims differ from Kito *et al.* by reciting an intermediate layer between the metal plate base and the noble metal film. Yamauchi *et al.* disclose a fuel cell separator with a metal base, which has an outer layer of an alloying element formed at its surface (section 0016). Besides this alloying layer (2) on the base (1), there is also a distinct coating (3). Because of the endurance and corrosion resistance provided by this arrangement (sections 0014 and 0015), it would be obvious to use the intermediate layer of Yamauchi *et al.* in the separator of Kito *et al.* Both Kito *et al.* (section 0013) and Yamauchi *et al.* (section 0033) teach stainless steel as a base material. Determining an appropriate type would be within the skill of the artisan. The alloying element in the intermediate layer of Yamauchi *et al.* would be present up to 12 weight percent (section 0022), thus falling below the upper limits in present claim 33.

The disclosure is objected to because of the following informalities: The number 6 is used to denote both a “tightening plate” (page 40, line 14 and figure 1) and “rolls” (page 53, line 5 and figure 11A). The number 4by, on page 51, line 21, is not found in the drawings. Appropriate correction is required.

Claim 1 is objected to because of the following informalities: The word “exposes” in the last line of this claim should instead be “exposed”. Appropriate correction is required.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references cited in the Search Report have been reviewed. Gyoten *et al.* (JP 2000-323151) discloses a protective film on a gas passage plate, comprising island-like sections. This is not applied in any rejection, because the discontinuous nature of the coating is already disclosed by Kito *et al.* The other references cited with “X” or “Y” are cited against claims that have been cancelled or withdrawn.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Kalafut whose telephone number is 571-272-1286. The examiner can normally be reached on Mon-Fri 8:00 am-4:30 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Stephen J. Kalafut/  
Primary Examiner, Art Unit 1795